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2010-02-26
M60 836/60 msg/nmn

Tonica Manufacturer Kvadrat A/S

**Determination of the
air flow resistance according to EN 29053**

Test Report No. M60 836/60

Client:	Kvadrat A/S Lundbergsvej 10 DK – 8400 Ebeltoft
Acoustic consultant:	M. Eng. Philipp Meistring
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1 Task

On behalf of Kvadrat A/S, DK – 8400 Ebeltoft, the airflow resistance of the fabric Tonica has to be measured according to EN 29053 [1].

2 Basics

This test report is based on the following documents:

- [1] EN 29053 “Acoustics – Materials for acoustical applications – Determination of airflow resistance”. 1993

3 Test object

The tested material is described by the manufacturer as follows:

- fabric
- manufacturer Kvadrat A/S
- type Tonica
- material: 100 % new wool

The test laboratory has determined the following parameters:

- area specific mass $m'' = 468 \text{ g/m}^2$
- thickness $t = 0.98 \text{ mm}$

4 Execution of measurements

The airflow resistance was determined according to EN 29053 [1] .

The measurements for the determination of the airflow resistance were carried out at different air velocities. The continuous airflow method was applied. The specimen holder has a diameter of 100 mm. The test specimen was fitted flat over the specimen holder, without stretching the material, sealed at the edges and fixed.

According to the standard the specific airflow resistance R_s is indicated as measurement result which was determined by extrapolation (linear regression) at an airflow velocity of $u = 0.0005 \text{ m/s}$.

The test equipment listed in appendix B was used for the measurements.

5 Measurement results

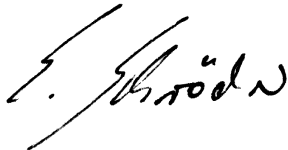
For the tested fabric, type Tonica, a specific airflow resistance of $R_s = 487 \text{ Pa} \cdot \text{s/m}$ was determined.

For further information regarding the measurements, see Appendix A.

6 Remark

The determined test results only refer to the prevailing conditions on the day of measurements.

This test report may only be published and copied as a whole including all of its appendixes. The publishing of extracts requires the prior written consent of Müller-BBM GmbH.



Dipl.-Phys. Elmar Schröder



M. Eng. Philipp Meistring

MÜLLER-BBM

Accredited Test Laboratory
according to ISO/IEC 17025



DAP-PL-2465.10

DIN EN 29053

Bestimmung des Strömungswiderstandes

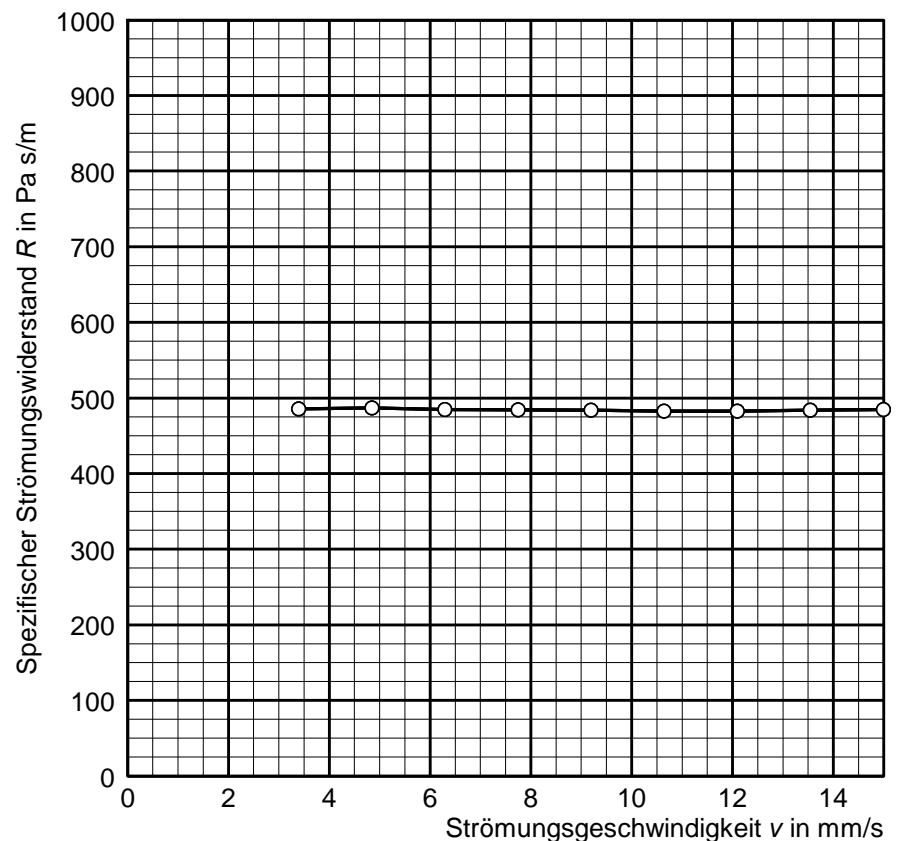
Auftraggeber: Kvadrat A/S, Lundbergsvej 10, 8400 Ebeltoft, Denmark
Auftragsnummer: M60836
Auftragsdatum: 24.02.2010

Dicke: 0,98 mm
Flächenbez. Masse: 468 g/m²
Dichte: 477,18 kg/m³
Prüfobjekt:

- fabric Kvadrat A/S, type Tonica
- material 100 % new wool
- MBBM Proben-Nr.: 07300

Probendurchmesser:
 $D = 100,0$ mm
Luftdruck:
 $B = 93,8$ kPa
Temperatur:
 $\theta = 24,7$ °C
Relative Feuchte:
 $r. h. = 26,2$ %

v [mm/s]	R [Pa s/m]
3,39	486
4,84	487
6,29	485
7,74	484
9,19	484
10,64	483
12,09	483
13,54	484
15,00	485



Spezifischer Strömungswiderstand $R_s = 487$ Pa s/m

Prüfstelle: Müller-BBM, Planegg
Prüfer: Walter
Prüfdatum: 25.02.2010

List of test equipment

For the measurements and evaluations, the following test equipment was applied:

Name	Manufacturer	Type	Serial-No.
Digital Mass Flow Controller	Bronkhorst	E-201CV-5KO-RGD-33V	M8211608A
Digital Power Supply / Readout Systems	Bronkhorst	E-7100-13-01-01-RBB	M8211608B
Differential pressure transmitter with DSCM-A	Halstrup Walcher	P26	M8211704G
Software for data logging and evaluation	Müller-BBM	AirFlowControl	v1.1